

LETTER

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LIVE MAMMAL PREY (*ZAEDYUS PICHII*) IN A NEST OF THE BLACK-CHESTED BUZZARD-EAGLE (*GERANOAETUS MELANOLEUCUS*)

Raptors bringing various kinds of live prey to their nests has been described by Spofford and Amadon (1993, *J Raptor Res.* 27:180–184). These authors concluded that this behavior was accidental or incidental and nonadaptive. While live insects, lizards, and birds were reported as having been brought to the nests of several species, live mammal prey were not described by Spofford and Amadon (1993).

We report here an instance of a live piche (*Zaedyus pichii*), a small species of South American armadillo, brought to a nest of a Black-chested Buzzard-Eagle (*Geranoaetus melanoleucus*) in southern Patagonia. The observation was recorded in Estancia “El Cuadro,” department Deseado, Santa Cruz province, Argentina (47°30'S, 68°W) during a study of the breeding biology of several raptors in southern Patagonia, Argentina, including Black-chested Buzzard-Eagle, between September 1987 and January 1988 (De Lucca and Saggese 1993, *Hornero* 13:302–305; De Lucca and Saggese 1995, *Hornero* 14:38–39; Saggese and De Lucca 1995, *Hornero* 14:21–26; and Saggese and De Lucca 2001, *Hornero* 16:77–84). The study area is within the Central Patagonic District—Patagonic province phytogeographic region (Cabrera 1976, *Regiones Fitogeográficas argentinas*, ACME Ediciones, Buenos Aires). A detailed description of the study area and nest site characteristics can be found in Saggese and De Lucca (2001).

On 17 November 1987, we observed the nest for 1 hr 45 min between 1915 H and 2100 H (sunset) from a blind placed 50 m in front of the cliff, with the aid of 7–10 × 50 binoculars. The nest was located at 12.5 m above the base of a basaltic cliff 25 m high. At the beginning of the observation period, the female was brooding a 5-d-old nestling on the nest. At 1944 H, the female suddenly stood up on the nest. At this time, we observed one adult-sized piche on the nest, walking slowly from one side of the nest to the other. The female buzzard-eagle remained standing up on the nest structure and made no attempt to grab the piche, but simply watched it walk across the nest. After 9 min, without any obvious change in the buzzard-eagle's behavior or attitude, the piche stopped walking and remained still on the front side of the nest, facing the cliff. Some seconds later, the piche fell out of the nest to the bottom of the cliff. At this point, the female buzzard-eagle showed interest, stood on the edge of the nest and looked down. Approximately 5 min later, she fed the young with food that was already in the nest for 16 min and then started to brood the nestling again until the end of the observation period. The male was perched on the cliff or away from the nesting area during this observation and was not involved in this event. During the 385 hr of close monitoring of this nest, no other incidents like this were observed.

We were not sure whether the piche jumped out of the nest or accidentally fell, but our impression was that the piche jumped out. To avoid disrupting the eagles, no attempt was made to approach the nest site to find the piche. The final outcome of the fallen piche was unknown, but the height from which the piche fell down and the large field of rocks at the base of the cliff, make the possibility of survival doubtful. At the end of the study, three piche's carapaches and bones were found among other prey remains at the base of this nesting cliff. Upon gross examination, no damage was found on the shells of the remains. Piche remains were found in other nests with nestlings, consumed as prey, as well as at the bottom of other nesting cliffs, but if they were consumed by the eagles or by other scavengers after falling from the nest could not be determined.

Piches were recorded as prey in several nests studied in this area, being 5.6% of prey remains found in three buzzard-eagle nests and 4.8% of prey at another nest (Saggese and De Lucca 2001). Massoia and Pardinás (1986, *Acintania* 23:24–26) and Hiraldo et al. (1995, *Wilson Bull.* 107:675–685) also reported piches as prey of these buzzard-eagles.

Piches are small mammals with a total body length of 260–335 mm, a tail length of 100–140 mm, and a mass of ca. 1–2 kg (Nowak 1999, *Walker's Mammals of the World*. Johns Hopkins Univ. Press, Baltimore, MD, and London, U K.). Like other armadillos (*Dasypodidae*), they have a bony shell on the dorsal part of their bodies, covered with a carapace (keratin layer) which gives them some protection from predators (Nowak 1999). The piche's protective shell is absent ventrally, where soft, naked skin is present. This is the only accessible area to most predators. Additionally, the piche shows a defensive behavior consisting of pulling its extremities inside its shell and pressing its body against the ground (Nowak 1999), which makes it difficult for predators to reach the soft ventral parts of its body.

Because piches are known as prey of these raptors, and owing to the inaccessibility of this cliff and nest, we suggest

that this live piche was brought to the nest by one of the buzzard-eagles, probably the male. As far as we know, this is the first recorded instance in which a live mammal prey item was brought to a raptor nest and escaped, although the ultimate fate of this prey was not known. The presence of this live armadillo in the nest may reflect the difficulty of a raptor killing it, due to the piche's armor and protective behavior.

That prey animals escape from predators by different mechanisms is widely recognized (e.g., Curio 1976, *The ethology of predation*, Springer, Berlin, Germany; Endler 1986, *Defense against predators*, pages 109–134 in M.E. Feder and G.V. Lauder [Eds.], *Predatory-prey relationship*, Univ. of Chicago Press, Chicago, IL U.S.A.). Spofford and Amadon (1993) also mentioned several instances in which living prey sometimes escaped from their predators after capture. Gehlbach (1994, *The Eastern Screech Owl*, Texas A&M Univ. Press, College Station, TX U.S.A.) reported that blind snakes (*Leptotyphlops* sp.) hunted by Eastern Screech Owls (*Otus asio*) frequently survive the attack thanks to their writhing defensive behavior, smooth cylindrical body and repellent secretions, after which some live commensally in the owl's nest, feeding on fly larvae and pupae.

Of course, no information exists concerning the frequency of escapes by piches from buzzard-eagles at their nests. The advantages of surviving an eagle attack because of the piche's carapache cover and then escaping from the nest are obvious, and these behavior and defense mechanisms may explain the low number of this species in the diet of Black-chested Buzzard-Eagle, despite the fact that piches seem to be fairly common in the Patagonia throughout the range of these raptors. Alternatively, the eagles may avoid hunting these armadillos because they are difficult to catch and kill. Further observations are needed in order to verify at what frequency are live armadillos brought to nest by Black-chested Buzzard-Eagle and under which circumstances.

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